Listing of Claims

1. (Currently Amended)   A magnetic resonance imaging method for forming an image of an object from a plurality of signals sampled in a restricted homogeneity region of a main magnet field of a magnetic resonance imaging apparatus, wherein a patient disposed on a table is moved continuously through the bore of the main magnet and spins in a predetermined area of the patient are excited by an excitation pulse from a transmitter antenna, such that an image is formed over a region exceeding largely the restricted region, ~~characterized in that~~wherein data is undersampled in the restricted region by means of at least one receiver antenna in a plurality of receive situations being defined as a block of measurements contiguous in time having preserved magnetisation and presaturation conditions within the excited area of the patient, and fold-over artefacts due to said undersampling are unfolded by means of the sensitivity pattern of the receiver antenna and/or the properties of selected factors determining said receive situations.

2. (Currently Amended)   A method as claimed in Claim 1, ~~characterized in that~~wherein the fold-over artefacts are unfolded by means of the excitation profile as selected factor.

3. (Currently Amended)   A method as claimed in Claim 1 ~~or 2~~, ~~characterized in that~~wherein the fold-over artefacts are unfolded by means of the magnetisation and presaturation profile as selected factor.

4. (Currently Amended)   A method as claimed in ~~one of~~ Claims 1 ~~to 3~~, ~~characterized in that~~wherein the fold-over artefacts are unfolded by means of the frequency-response pattern of the receiver as selected factor.

5. (Currently Amended)   A method as claimed in ~~one of~~ Claims 1 ~~to 4~~, ~~characterized in that~~wherein during sampling of data within the restricted region the table will be moved over at most one half of the size of the restricted region.

6. (Currently Amended)   A method as claimed in ~~one of~~ Claims 1 ~~to 5~~, ~~characterized in that~~wherein at least one global receiver antenna disposed in a fixed relationship to the main magnet system and a plurality of local receiver antennae disposed in a fixed relationship to the patient on the table are provided.

7. (Currently Amended)   A method as claimed in ~~one of~~ claims 1 ~~to 6~~, ~~characterized that~~wherein a reference scan is provided for obtaining the sensitivity pattern of the receiver antenna.

8. (Currently Amended)   A method as claimed in claim 7, ~~characterized in that~~wherein data is acquired in a number of discrete reference scan segments at different table positions in the restricted region, whereas during each reference scan the table stands still, and from the data obtained by the reference scans the sensitivity patterns of the local coils are calculated.

9. (Currently Amended)   A method as claimed in claim 7 ~~or 8~~, ~~characterized in that~~wherein the table is moved at a speed which is less than half of the homogeneity volume of the main magnet over the scan time of k-space, whereas k-space is continuously scanned in a row-to-row manner, and the sensitivity profiles of the local coils are calculated by interpolation of the measured profiles at different table positions.

10. (Currently Amended)   A method as claimed in ~~any of~~ claims 1 ~~to 9~~, ~~characterized in that~~wherein the sampled data is reconstructed in an iterative manner, in that data sampled largely offset of the centre of the main magnet, which is folding-in on the data sampled in the centre of the main magnet, is purposedly distorted such that a undistorted image is reconstructed and subtracted from the fold-in image.

11. (Original)   A magnetic resonance imaging apparatus for obtaining an MR image from a plurality of signals comprising:

-   a main magnet,
-   a transmitter antenna for excitation of spins in a predetermined area of the patient,
-   at least one receiver antenna for sampling a plurality of signals in a restricted homogeneity region of the main magnet field,
-   a table for bearing a patient,
-   means for continuously moving the table through the bore of the main magnet,
-   means for adapting the frequency profile of the transmitter antenna and the frequency profile of the receiver antenna to the position of the continuously moving table relative to a reference point,
-   means for sampling the data in the restricted region in a given receive situation being defined as a block of measurements contiguous in time with preserved magnetisation and presaturation conditions in the excited area of the patient, and
-   means for unfolding fold-over artefacts due to undersampling by means of the sensitivity pattern of the receiver antenna and/or the properties of selected factors determining said receive situations.

12. (Original)   Apparatus according to Claim 11, further comprising at least one global receiver antenna disposed at a fixed relationship to the main magnet system and a plurality of local receiver antennae disposed in a fixed relationship to the patient on the table.

13. (Original)   A computer program product stored on a computer usable medium for forming an image by means of the magnetic resonance method, comprising a computer readable program means for causing the computer to control the execution:

- creating a main magnetic field by a main magnet,

- excitation of spins in a predetermined area of the patient by a transmitter antenna,

- sampling a plurality of signals in a restricted homogeneity region of the main magnet field by at least one receiver antenna,

- continuously moving a table bearing a patient through the bore of the main magnet,

- adapting the frequency profile of the transmitter antenna and the frequency profile of the receiver antenna to the position of the continuously moving table relative to a reference point,

- undersampling the data in the restricted region in a given receive situation being defined as a block of measurements contiguous in time with preserved magnetisation and presaturation conditions in the excited area of the patient, and

- unfolding fold-over artefacts due to said undersampling by means of the sensitivity pattern of the receiver antenna and/or the properties of selected factors determining said receive situations.